

for movement of objects in the water, for movements of the operator, for jarring the vessel in which they were. There was no evidence of ability to discriminate patterns, altho they discriminated the shape of objects, such as a dobson-larva.

Their behavior is stereotyped. The associations are few and simple—such as relate directly to their life struggle. They were able to learn nothing as complex as passing thru a definite opening to secure food. The associations are fairly permanent, lasting as long as 42 days. They are more difficult to modify than to establish at the outset.

AGE AND FERTILITY IN FOWLS

Pearl (*Proc. Nat. Acad. Sci.*, 1917, 3, p. 354) compares the cycle of progress in the fertility of mammals and poultry. In mammals fertility seems to begin below the maximum, increase, and then decline until sterility is reached. In fowls the maximum seems to occur at the first breeding season—when the combined age of the parents at mating is only two years. There is a strong drop from this to the point where the sum of the ages is three years. From three to four there is little change. In passing from this period to a combined parental age of five years there is another large drop.

The same author (*Genetics*, 1917, 2, p. 417) formulates a fertility index which represents a practical measure of the reproductive value of mated pairs of domestic fowls. This is that percentage of the maximum total number of chicks physiologically possible, which any given mating shows. It includes the total number of chicks produced which are capable of living three weeks after hatching. In the rapid decline in fertility expressed above, the rate of decline is more rapid in the male than in the female.

SEX RATIO IN CHICKENS

Pearl (*Science* 1917, 46, 220) states that the normal per cent of cockerels is 48.57. It seems that this ratio is correlated with the laying ability of the hens. In hens which have been bred and selected to a high egg productivity, a still larger proportion of pullets is produced.

NEW PROCESS OF KEEPING FISH BY BRINE FREEZING

Gardiner and Nuttall (*Proc. Cambr. Phil. Soc.* 1918; 19:185) give an account of a brine freezing process at high temperature which pro-